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(74) Agents: **BANFI, Paolo et al.**; Bianchetti Bracco Minoja  
S.r.l., Via Plinio, 63, I-20129 Milano (IT).

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(71) Applicant (*for all designated States except US*): **ISTITUTO NAZIONALE PER LO STUDIO E LA CURA DEI TUMORI** [IT/IT]; Via Venezian, 1, I-20133 Milan (IT).

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(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **PINNA, Lorenzo, A.** [IT/IT]; Via Venezian, 1, I-20133 Milano (IT). **DONELLA-DEANA, Arianna** [IT/IT]; Via Venezian, 1, I-20133 Milano (IT). **MARIN, Oriano** [IT/IT]; Via Venezian, 1, I-20133 Milano (IT). **MOLOGNI, Luca** [IT/IT]; Via Venezian, 1, I-20133 Milano (IT). **GUNBY, Rosalind** [GB/IT]; Via Venezian, 1, I-20133 Milano (IT). **GAMBACORTI PASSERINI, Carlo** [IT/IT]; Via Venezian, 1, I-20133 Milano (IT). **SCAPOZZA, Leonardo** [CH/IT]; Via Venezian, I-20133 Milano (IT).

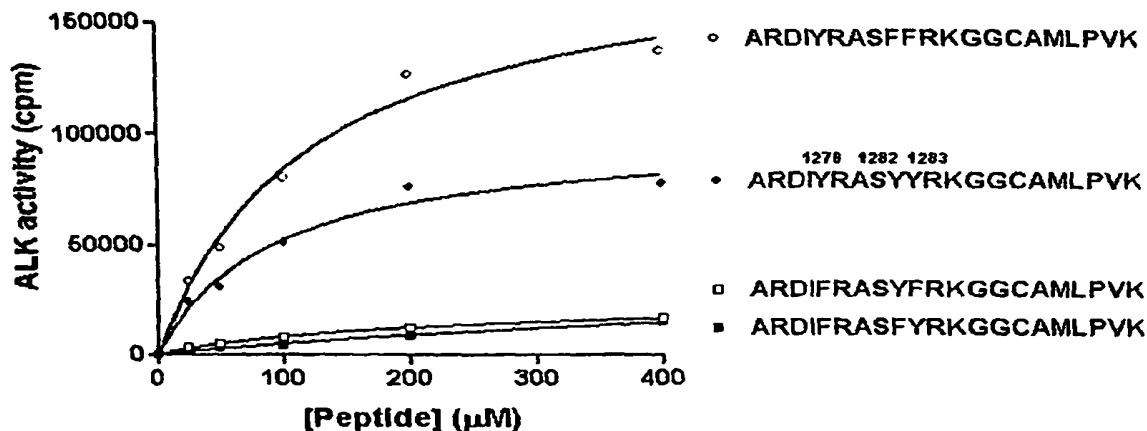
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(54) Title: ANAPLASTIC LYMPHOMA KINASE ASSAY, REAGENTS AND COMPOSITIONS THEREOF



(57) Abstract: Disclosed are methods for detecting ALK tyrosine kinase activity and for the identification of compounds that modulate ALK activity, peptide substrates, reagents and compositions thereof.

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

Inter:

I Application No

PCT/EP2004/002185

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 C12Q1/48 C07K14/72 G01N33/74 A61K31/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 C12Q C07K A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data, BIOSIS, CHEM ABS Data, EMBASE, MEDLINE, Sequence Search

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DATABASE WPI Section Ch, Week 199325 Derwent Publications Ltd., London, GB; Class A96, AN 1993-201126 XP002249142 & JP 05 126833 A (TOSOH CORP) 21 May 1993 (1993-05-21) abstract	1-17,19, 20
A	----- US 5 770 421 A (LOOK A THOMAS ET AL) 23 June 1998 (1998-06-23) the whole document	1-17,19, 20
A	----- WO 95/14930 A (SADICK MICHAEL DANIEL ;GENENTECH INC (US); GODOWSKI PAUL J (US); M) 1 June 1995 (1995-06-01) the whole document ----- -/--	1-17,19, 20

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

1 July 2004

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28 SEP 2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Gunster, M

## INTERNATIONAL SEARCH REPORT

Intern: Application No  
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 98/49317 A (PELES ELIOR ;ONRUST SUSAN (NZ); CLARY DOUGLAS (US); HUI TERENCE H) 5 November 1998 (1998-11-05) the whole document	1-17,19, 20
A	----- WO 95/02187 A (BARKER KAREN TRACEY ;CROMPTON MARK ROGER (GB); MARTINDALE JANE ELI) 19 January 1995 (1995-01-19) the whole document	1-17,19, 20
A	----- SADICK M D ET AL: "Kinase receptor activation (KIRA): A rapid and accurate alternative to end-point bioassays" JOURNAL OF PHARMACEUTICAL AND BIOMEDICAL ANALYSIS 1999 NETHERLANDS, vol. 19, no. 6, 1999, pages 883-891, XP002249139 ISSN: 0731-7085 the whole document	1-17,19, 20
A	----- TURTURRO FRANCESCO ET AL: "Model of inhibition of the NPM-ALK kinase activity by herbimycin A." CLINICAL CANCER RESEARCH: AN OFFICIAL JOURNAL OF THE AMERICAN ASSOCIATION FOR CANCER RESEARCH. UNITED STATES JAN 2002, vol. 8, no. 1, January 2002 (2002-01), pages 240-245, XP002249140 ISSN: 1078-0432 the whole document	1-17,19, 20
A	----- MORRIS STEPHAN W ET AL: "ALK, the chromosome 2 gene locus altered by the t(2;5) in non-Hodgkin's lymphoma, encodes a novel neural receptor tyrosine kinase that is highly related to leukocyte tyrosine kinase (LTK)." ONCOGENE, vol. 14, no. 18, 1997, pages 2175-2188, XP002249141 ISSN: 0950-9232 the whole document	1-17,19, 20
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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP2004/002185

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-17, 19, 20

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-17,19,20

ALK assay using a peptide of SEQ ID N. 1 or SEQ ID N. 2 and said peptides and related kits.

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2. claim: 18

Use of compounds of formula (I) for the preparation of a medicament for the treatment of ALK-related tumors.

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## INTERNATIONAL SEARCH REPORT

Intern

Application No

PCT/EP2004/002185

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 5126833	A	21-05-1993	NONE	
US 5770421	A	23-06-1998	US 5529925 A	25-06-1996
			US 6174674 B1	16-01-2001
			US 6451997 B1	17-09-2002
			US 2001021505 A1	13-09-2001
			AU 679833 B2	10-07-1997
			AU 1511695 A	19-06-1995
			CA 2177957 A1	08-06-1995
			DE 69433665 D1	06-05-2004
			EP 0731806 A1	18-09-1996
			JP 9512161 T	09-12-1997
			WO 9515331 A1	08-06-1995
WO 9514930	A	01-06-1995	US 6001621 A	14-12-1999
			AT 163231 T	15-02-1998
			AU 697142 B2	01-10-1998
			AU 1180095 A	13-06-1995
			AU 698975 B2	12-11-1998
			AU 1210895 A	13-06-1995
			CA 2175892 A1	01-06-1995
			CA 2175893 A1	01-06-1995
			DE 69408541 D1	19-03-1998
			DE 69408541 T2	06-08-1998
			DK 730740 T3	28-09-1998
			EP 0730646 A1	11-09-1996
			EP 0730740 A1	11-09-1996
			ES 2116066 T3	01-07-1998
			GR 3026430 T3	30-06-1998
			HK 1008440 A1	07-05-1999
			JP 9506250 T	24-06-1997
			JP 3442784 B2	02-09-2003
			JP 9505889 T	10-06-1997
			WO 9514776 A1	01-06-1995
			WO 9514930 A1	01-06-1995
			US 2002147325 A1	10-10-2002
			US 2003204072 A1	30-10-2003
			US 5766863 A	16-06-1998
			US 6025145 A	15-02-2000
			US 6287784 B1	11-09-2001
			US 5914237 A	22-06-1999
			US 5891650 A	06-04-1999
			US 6096527 A	01-08-2000
			US 5709858 A	20-01-1998
			US 6087144 A	11-07-2000
			US 2002137113 A1	26-09-2002
WO 9849317	A	05-11-1998	AU 7260098 A	24-11-1998
			CA 2288221 A1	05-11-1998
			EP 0979288 A2	16-02-2000
			JP 2002513289 T	08-05-2002
			US 2003073143 A1	17-04-2003
			WO 9849317 A2	05-11-1998
			US 6228641 B1	08-05-2001
			US 2002119501 A1	29-08-2002
			US 2003095970 A1	22-05-2003
			US 2003008347 A1	09-01-2003
			US 6342593 B1	29-01-2002

# INTERNATIONAL SEARCH REPORT

Intern Application No  
PCT/EP2004/002185

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9849317 A		US 6388063 B1 US 2004087783 A1	14-05-2002 06-05-2004
WO 9502187 A	19-01-1995	AU 7081094 A WO 9502187 A1 ZA 9404983 A	06-02-1995 19-01-1995 08-01-1996